

Form PTO-1449

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

Serial No.

00-713-i19

09/976,863

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT****COPY OF PAPERS  
ORIGINALLY FILED**

Applicant: Chad A. Mirkin, et al.

Filing Date: 10/12/01

Group: 1656

**U.S. PATENT DOCUMENTS**

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date
<i>h</i>	1.	5,288,609	02/08/94	Mroczkowski, et al.			
	2.	5,284,748	02/22/94	Engelhardt, et al.			
	3.	5,360,895	11/01/94	Hainfield, et al.			
	4.	5,384,265	01/24/95	Kidwell, et al.			
	5.	5,472,881	12/05/95	Beebe, et al.			
	6.	5,599,668	02/04/97	Stimpson, et al.			
	7.	5,637,508	06/10/97	Kidwell, et al.			
	8.	5,751,018	05/12/98	Alivisatos, et al.			
	9.	5,939,021	08/17/99	Hansen, et al.			
<i>h</i>	10.	5,990,479	11/23/99	Weiss, et al.			

**FOREIGN PATENT DOCUMENTS**

		Document Number	Date	Country	Class	Subclass	Translation Yes No
<i>h</i>	11.	WO 93/10564	27 May 93	PCT			
	12.	WO 98/10289	12 March 98	PCT			
	13.	WO 99/23258	14 May 99	PCT			
	14.	WO 99/21934	06 May 99	PCT			
<i>h</i>	15.	WO 99/20789	29 April 99	PCT			

**OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.**

<i>h</i>	16.	O.D. Velev, et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," <i>Langmuir</i> , Vol. 15, No. 11, pp. 3693-3698, May 25, 1999
----------	-----	--

Examiner

Date Considered

4/15/03

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.

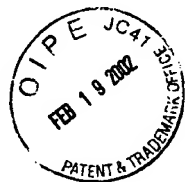
FORM PTO-1449  
(Rev. 2-32)U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

00-713-119

Serial No.

09/976,863

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)

COPY OF PAPERS  
ORIGINALLY FILED

RECEIVED

FEB 26 2002

Applicant:

Chad A. Mirkin, et al.

TECH CENTER 1600/2900

Filing Date:

October 12, 2001

Group:

1656

## U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
<i>h</i>	1.	5,599,668	02/04/97	Stimpson, et al.			
<i>h</i>	2.	5,990,479	11/23/99	Weiss, et al.			

## FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes	No

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

<i>h</i>	3.	Stimpson, et al., "Real-time detection of DNA hybridization and melting on oligonucleotide arrays by using optical wave guides," <i>Proc. Natl. Acad. Sci.</i> , Vol. 92, pp. 6379-6383, California Institute of Technology (1995) U.S.
	4.	Storhoff, et al., "Strategies for Organizing Nanoparticles into Aggregate Structures and Functional Materials," <i>Journal of Cluster Science</i> , Vol. 8, No. 2, pp. 179-217, Plenum Publishing Corporation (1997) U.S.
	5.	Storhoff, et al., "One-Pot Colorimetric Differentiation of Polynucleotides with Single Base Imperfections Using Gold Nanoparticle Probes," <i>J. Am. Chem. Soc.</i> , Vol. 120, pp. 1961-1964, American Chemical Society (1998) U.S.
	6.	Velev, et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," <i>Langmuir</i> , Vol. 15, No. 11, pp. 3693-3698, American Chemical Society (1999) U.S.
<i>h</i>	7.	Zhu, et al., "The First Raman Spectrum of an Organic Monolayer on a High-Temperature Superconductor: Direct Spectroscopic Evidence for a Chemical Interaction between an Amine and Yb <sub>2</sub> Cu <sub>3</sub> O <sub>7-δ</sub> ," <i>J. Am. Chem. Soc.</i> , Vol. 119, pp. 235-236, American Chemical Society (1997) U.S.

EXAMINER

DATE CONSIDERED

4/15/02

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449  
(Rev. 2-32)U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

00-713-i19

Serial No.

09/976,863

RECEIVED

FEB 26 2002

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)

COPY OF PAPERS  
ORIGINALLY FILED

Applicant:

TECH CENTER 1600/2900

Chad A. Mirkin, et al.

Filing Date:

October 12, 2001

Group:

1656

## U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate

## FOREIGN PATENT DOCUMENTS

Document Number	Date	Country	Class	Subclass	Translation	
					Yes	No

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

8.	Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs an Their Use as Tracer Labels in Clinical and Biological Applications," I. Theory, <i>Analytical Biochemistry</i> , Vol. 262, pp. 137-156 (1998) U.S.
9.	Yguerabide, et al., "Light-Scattering Submicroscopic Particles as Highly Fluorescent Analogs an Their Use as Tracer Labels in Clinical and Biological Applications," II. Experimental Characterization, <i>Analytical Biochemistry</i> , Vol. 262, pp. 157-176 (1998) U.S.

EXAMINER

DATE CONSIDERED

4/15/03

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

00-713-i19

Serial No.

09/976,863



INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)

RECEIVED

FEB 26 2002

COPY OF PAPERS  
ORIGINALLY FILED

TECHNOLITER 1600/2900

Applicant:

Chad A. Mirkin, et al.

Filing Date:

October 12, 2001

Group:

1656

U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
<i>Ch</i>	1.	5,609,907	03/11/97	Natan			
<i>Ch</i>	2.	6,025,202	02/15/00	Natan			
<i>Ch</i>	3.	6,149,868	11/21/00	Natan, et al.			

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)


EXAMINER

DATE CONSIDERED

4/15/02

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

00-713-119

Serial No.

09/976,863



**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use several sheets if necessary)

**COPY OF PAPERS  
ORIGINALLY FILED**

**Applicant:**

Chad A. Mirkin, et al.

**Filing Date:**

October 12, 2001

**Group:**

1656

**U.S. PATENT DOCUMENTS**

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate

**FOREIGN PATENT DOCUMENTS**

Document Number	Date	Country	Class	Subclass	Translation Yes No

**OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)**

1.	Brada, et al., "Golden Blot" – Detection of Polyclonal and Monoclonal Antibodies Bound to Antigens on Nitrocellulose by Protein A-Gold Complexes, <i>Analytical Biochemistry</i> , Vol. 42, pp. 79-83 (1984) U.S.
2.	Dunn, et al., "A Novel Method to Map Transcripts: Evidence for homology between an Adenovirus mRNA and Discrete Multiple Regions of the Viral Genome, <i>Cell</i> , Vol. 12, pp. 23-36, (1997) U.S.
3.	Hacker, "High performance Nanogold – Silver in situ hybridisation, <i>Eur. J. Histochem</i> , Vol. 42, pp. 111-120 (1998) U.S.
4.	Ranki, et al., "Sandwich hybridization as a convenient method for the detection of nucleic acids in crude samples," <i>Gene</i> , Vol. 21, pp. 77-85 (1983) U.S.
5.	Romano, et al., "An antiglobulin reagent labelled with colloidal gold for use in electron microscopy," <i>Immunochemistry</i> , Vol. 11, pp. 521-522 (1974) Great Britain

EXAMINER

DATE CONSIDERED

4/15/03

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation not in conformance and not considered. Include copy of this form with next communication.

Form PTO-1449

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

00-713-i19

Serial No.

09/976,868

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANTCOPY OF PAPERS  
ORIGINALLY FILED

Applicant: Chad A. Mirkin, et al.

Filing Date: 10/12/01

Group: 1656



RECEIVED  
FEB 26 2002  
TECH CENTER 1600/2900

## U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date
u	1.	4,193,983	3/18/80	Ullman et al.			
	2.	4,256,834	3/17/81	Zuk et al.			
	3.	4,261,968	4/14/81	Ullman et al.			
	4.	4,313,734	2/2/82	Leuving			
	5.	4,318,707	3/9/82	Litman et al.			
	6.	4,650,770	3/17/87	Liu et al.			
	7.	4,713,348	12/15/87	Ullman			
	8.	4,853,335	8/1/89	Olsen et al.			
	9.	4,868,104	9/19/89	Kura et al.			
	10.	5,225,064	7/6/93	Henkens et al.			
	11.	5,294,369	3/15/94	Shigekawa et al.			
u	12.	5,384,073	1/24/95	Shigekawa et al.			
	13.	<del>5,384,265</del>	<del>1/24/95</del>	<del>Kidwell et al.</del> dup			
u	14.	5,460,831	10/24/95	Kossovsky et al.			
	15.	<del>5,472,881</del>	<del>12/5/95</del>	<del>Beebe et al.</del> dup			
u	16.	5,514,602	05/07/96	Brooks, Jr. et al.			
	17.	5,521,289	5/28/96	Hainfeld et al.			
	18.	5,543,158	8/6/96	Gref et al.			
	19.	5,571,726	11/05/96	Brooks, Jr. et al.			
	20.	5,665,582	9/9/97	Kaushch et al.			
u	21.	5,681,943	10/28/97	Letsinger et al.			


## OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

--	--

Examiner

Date Considered

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.

Form PTO-1449	U.S. Department of Commerce Patent and Trademark Office	Atty. Docket No. 00-713-i19	Serial No. 09/976,863
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  		Applicant: Chad A. Mirkin, et al.	
		Filing Date: 10/12/01	Group: 1656

COPY OF PAPERS  
ORIGINALLY FILED

### U.S. PATENT DOCUMENTS

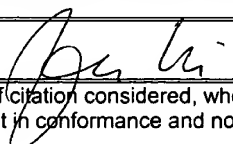
Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date

### FOREIGN PATENT DOCUMENTS

	Document Number	Date	Country	Class	Subclass	Translation Yes No
g	22. WO 89/06801	7/27/89	PCT	<del> </del>	<del> </del>	
	23. WO 97/40181	10/30/97	PCT	<del> </del>	<del> </del>	
	24. WO 98/04740	2/5/98	PCT	<del> </del>	<del> </del>	
	25. WO 99/23258	10/30/98	PCT	<del> </del>	<del> </del>	
	26. 0 630 974 A2	06/21/94	EPO	<del> </del>	<del> </del>	
n	27. 0 667 398 A2	8/16/95	EPO	<del> </del>	<del> </del>	

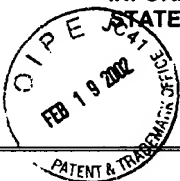
### OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

g	28.	Alivisatos et al., "Organization of 'nanocrystal molecules' using DNA," <i>Nature</i> , Vol. 382, pp. 609-611 (1996)
	29.	Bain, et al., "Modeling Organic Surfaces with Self-Assembled Monolayers," <i>Angew. Chem. Int. Ed. Engl.</i> , Vol. 28, pp. 506-512 (1989)
	30.	Bradley, "The Chemistry of Transition Metal Colloids," <i>Clusters and Colloids: From Theory to Applications</i> G. Schmid, Editor, BCH, Weinheim, New York, pp. 459-542 (1994)
	31.	Brust et al., "Novel Gold-Dithiol Nano-Networks with Non-Metallic Electronic Properties," <i>Adv. Mater.</i> , Vol 7, pp. 795-797 (1995)
	32.	Chen et al., "A Specific Quadrilateral Synthesized from DNA Branched Junctions," <i>J. Am. Chem. Soc.</i> , Vol. 111, pp. 6402-6407 (1989)
	33.	Chen & Seeman, "Synthesis from DNA of a molecule with the connectivity of a cube," <i>Nature</i> , Vol. 350, pp. 631-633 (1991)
	34.	Chen et al., "Crystal Structure of a Four-Stranded Intercalated DNA: d(C <sub>4</sub> ) <sup>††</sup> <i>Biochem.</i> , Vol. 33, pp. 13540-13546 (1994)
g	35.	Dagani, "Supramolecular Assemblies DNA to organize gold nanoparticles," <i>Chemical &amp; Engineering News</i> , p. 6-7, August 19, 1996

Examiner 	Date Considered 4/15/03
---	----------------------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.

Form PTO-1449	U.S. Department of Commerce Patent and Trademark Office	Atty. Docket No. 00-713-i19	Serial No. 09/976,868
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <b>COPY OF PAPERS ORIGINALLY FILED</b>		Applicant: Chad A. Mirkin, et al.	
		Filing Date: 10/12/01	Group: 1656



**RECEIVED**  
FEB 26 2002  
TECH CENTER 1600/2300

## U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date

## FOREIGN PATENT DOCUMENTS

Document Number	Date	Country	Class	Subclass	Translation Y s No

## OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.

u	50.	Roubi, "MOLECULAR MACHINES - Nanodevice with rotating arms assembled from synthetic DNA," <i>Chemical &amp; Engineering News</i> , p. 13, (Jan. 1999)
	51.	Seeman et al., "Synthetic DNA knots and catenanes," <i>New J. Chem.</i> , Vol. 17, pp. 739-755 (1993)
	52.	Shaw & Wang, "Knotting of a DNA Chain During Ring Closure," <i>Science</i> , Vol. 260, pp. 533-536 (1993)
	53.	Shekhtman et al., "Stereostructure of replicative DNA catenanes from eukaryotic cells," <i>New J. Chem.</i> Vol. 17, pp. 757-763 (1993)
	54.	Smith and Feigon, "Quadruplex structure of Oxytricha telomeric DNA oligonucleotides," <i>Nature</i> , Vol. 356, pp. 164-168 (1992)
	55.	Thein et al., "The use of synthetic oligonucleotides as specific hybridization probes in the diagnosis of genetic disorders," 2 <sup>nd</sup> Ed., K.E. Davies, Ed., Oxford University Press, Oxford, New York, Tokyo, p. 21-33 (1993)
	56.	Wang et al., "Assembly and Characterization of Five-Arm and Six-Arm DNA Brached Junctions," <i>Biochem.</i> , Vol. 30, pp. 5667-5674 (1991)
	57.	Wang et al., "A DNA Aptamer Which Binds to and Inhibits Thrombin Exhibits a New Structural Motif for DNA," <i>Biochem.</i> , Vol. 32, pp. 1899-1904 (1993)
	58.	Weisbecker et al., "Molecular Self-Assembly of Aliphatic Thiols on Gold Colloids," <i>Langmuir</i> , Vol. 12, pp. 3763-3772 (1996)
	59.	Wells, "Unusual DNA Structures," <i>J. Biol. Chem.</i> , Vol. 263, pp. 1095-1098 (1988)
	60.	Zhang et al., "Informational Liposomes: Complexes Derived from Cholesteryl-conjugated Oligonucleotides and Liposomes," <i>Tetrahedron Lett.</i> , Vol. 37, pp. 6243-6246 (1996)
u		

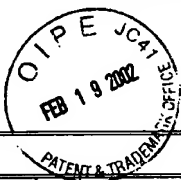
Examiner <i>[Signature]</i>	Date Considered 4/15/03
--------------------------------	----------------------------

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.



**COPY OF PAPERS  
ORIGINALLY FILED**

Group: 1656



Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date

FOREIGN PATENT DOCUMENTS							
		Document Number	Date	Country	Class	Subclass	Translation Yes No
<i>M</i>	1.	WO 92/04469	19 March 1992	PCT	<del>_____</del>	<del>_____</del>	X
<i>M</i>	2.	WO 90/02205	8 March 1990	PCT	<del>_____</del>	<del>_____</del>	X

3.	Borman, <i>Chem.Eng. News</i> , December 9, 1996, pp.42-43 (1996)
4.	Tomlinson et al., <i>Anal. Biochem</i> , Vol. 171, pp. 217-222 (1998)

**RECEIVED**

**FEB 26 2002**

**TECH CENTER 1600/2900**

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.